Supplemental Figure 1

Photomicrograph of the ventral horn of the spinal cord at the level of L5 from the SLICK-A mouse. Motoneurons are identified by their characteristic morphology and the expression of choline-acetyl transferase (ChAT, red). 33% of motoneurons are YFP positive (green). Scale bar represents20 μm.

Supplemental Figure 2

The SLICK-A transgene is expressed in NF200 positive DRG cells and Cre activity is effectively induced on treatment with tamoxifen. ***A*** The pattern of YFP expression in SLICK-A mice has previously been characterised in motoneurons (Young et al., 2008) but not in DRG cells. In the SLICK-A mouse, 1.7%±0.3 of DRG cells were YFP positive and all of these DRG cells were also immunostained for phosphorylated Neurofilament heavy chain (a marker for DRG cells with large diameter myelinated axons but did not express CGRP or bind IB4 (markers of small diameter DRG cells with unmyelinated axons data not shown). ***B-E*** Administration of tamoxifen but not vehicle to SLICK-A Cre; ROSA 26 mice resulted in the induction of β Galactosidase immunoreactivity in YFP positive DRG cells (***B-C***) and motoneurons (***D-E***). Vh- Vehicle, Tx- Tamoxifen. Scale bars: ***A***, 50 μm; ***B-E***, 25 μm.

Supplemental Figure 3

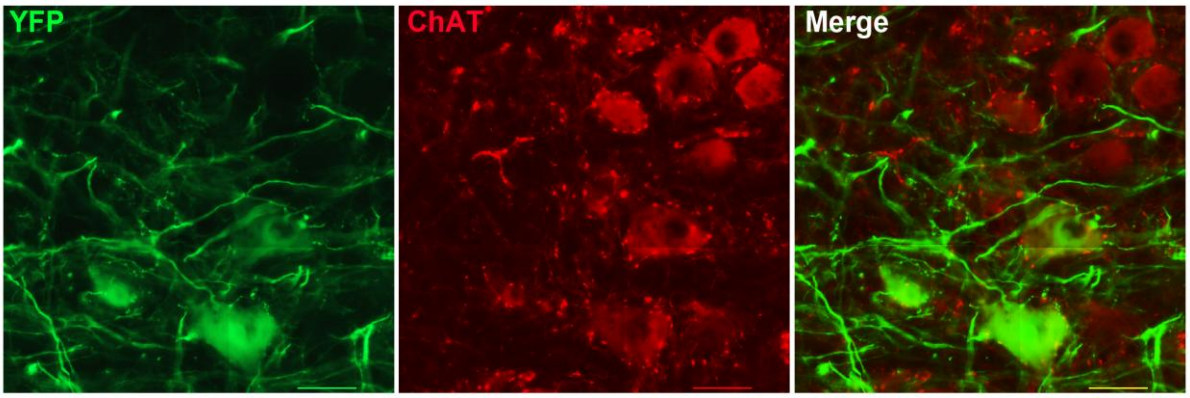
As a further control, tamoxifen treated SLICK-A Cre; NRG-$1^{+/+}$ animals were used. ***A*** In contrast to conditional NRG1 mutant (tamoxifen dosed SLICK-A Cre; NRG-$1^{fl/fl}$) animals, YFP positive axons of tamoxifen dosed SLICK-A Cre; NRG-$1^{+/+}$ animals demonstrated effective remyelination at 8 weeks following sciatic nerve crush. ***B*** A plot of G-ratio frequency distribution in tamoxifen treated SLICK-A Cre; NRG-$1^{+/+}$ versus conditional NRG1 mutant showing a significant increase in the G-ratio of conditional NRG1 mutant animals ($p<0.001$ Kolmogorov Smirnov), n=4 per group. Scale bar: 500nm.

Supplemental Figure 4

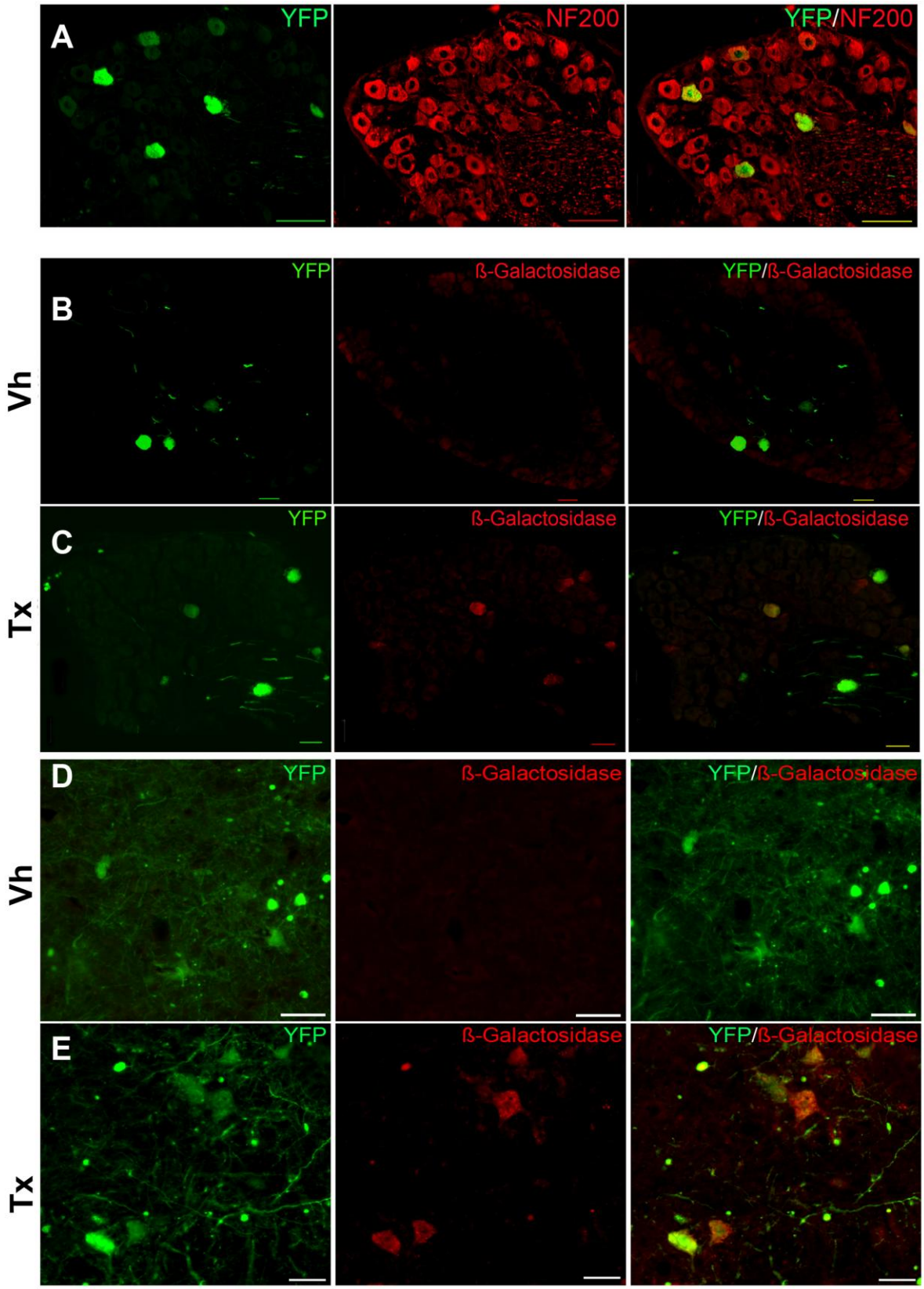
A Photomicrograph of a portion of the whole-mounted tibial nerve from an uninjured SLICK-A Cre; $Nrg1^{fl/fl}$; individual YFP positive axons can be distinguished. ***B*** An injured SLICK-A Cre; $Nrg1^{fl/fl}$ tibial nerve, 16mm from the crush site 10 days post injury photographed at higher power. Growth cones can be seen (arrows). ***C*** As a further control, comparison was also made with tamoxifen treated SLICK-A Cre;$NRG1^{+/+}$ animals. There were less regenerating axons in the conditional NRG1 mutant, compared to SLICK-A Cre;$NRG1^{+/+}$

(*p<0.05 Two Way ANOVA post hoc Tukey) at 10 days post sciatic nerve crush. Scale bar: ***A*** 500 µm ***B*** 100 µm.

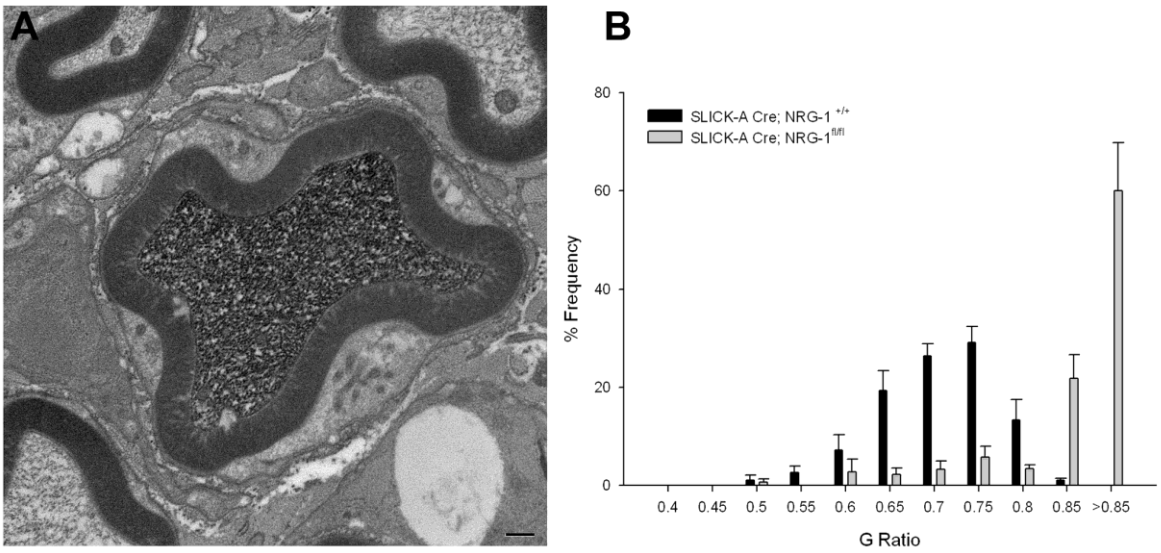
Supplementary Figure 1.



Supplementary Figure 2.



Supplemental Figure 3.



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